

Digital banking, customer satisfaction and loyalty: A public–private sector bank comparison in India

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Abstract

Purpose: This study investigates how the relationship between dimensions of digital banking services and customer satisfaction differs between public and private banks in India, filling a methodological void in comparative banking research.

Design/methodology/approach: The cross-sectional survey, which consisted of 450 digital banking users, was evenly distributed between public and private sector banking clients (225 from each group) and tested by means of the Partial Least Squares Structural Equation Modeling (PLS-SEM) with Multi-Group Analysis (MGA). Measurement invariance was confirmed via the MICOM approach. The five constructs that form digital service quality include Reliability, App/Website Design, Privacy and Security, Responsiveness, and Assurance and were used as antecedents to Customer Satisfaction, which is a predictor of Customer Loyalty.

Findings: All five dimensions of service quality proved to be a significant predictor of Customer Satisfaction ($\beta = 0.18\text{--}0.24$, $p < .001$, $R^2 = .43$). Customer Satisfaction was a significant predictor of Customer Loyalty ($\beta = 0.57$, $p < .001$, $R^2 = .33$), with the mediator effect being proven for all five dimensions. The results from multi-group analysis suggested that the effect of App/Website Design on Customer Satisfaction was higher in case of the private bank customers, while the effect of Privacy and Security was higher in case of public banks.

Originality/value: The study makes use of a valid PLS-SEM, digital banking service quality framework (EBSQ), and invariance tested multigroup analysis (MGA) for generating insights on digital banking service quality in India specific to ownership.

Keywords: Digital banking, service quality, customer satisfaction, customer loyalty, PLS-SEM, multi-group analysis, measurement invariance, India

Introduction

Digitalization of the banking sector in India has transformed the customers' expectations, with mobile and online banking being the main interface between customers and banks in the country. The volume of digital transactions in India has reached the level at which the digital channel, not the branch office, becomes the main interface between customers and banks. However, although the volume of digital transactions in India has been so impressive, there is a paucity of studies that explore the question of how PSBs and private banks perform in terms of their service quality in the digital channel and how customers view these banks' service quality in this channel. This is important due to the fact that the PSBs possess an extensive customer base thanks to the historical advantages of these banks. At the same time, the private sector banks have traditionally been more innovative in developing their digital channels.

This is an important issue not only theoretically but also practically. In terms of theoretical importance, it tries to fill the gap in the application of service quality theory to the case of the dual ownership system of banking that exists in India. In practical terms, it provides banks, especially public sector banks that aim at bridging the perception gap between themselves and their private sector counterparts, the areas that deserve investment.

Recent supervisory commentaries about the Indian banking industry underscore the relevance of this question. Both the industry analysis and regulatory analysis have noted consistently that private banks generally perform better on

digitalization and cybersecurity preparedness compared to public sector banks. In addition, it has been noted that there is a higher level of technological deterioration of digital payment services by public sector banks compared to private banks. These differences indicate that there are likely to be different views of the quality of digital services offered by the banks and their impact on customer satisfaction and loyalty.

The Methodological Gap

The study is prompted by a certain gap in the methodology used in the existing literature. Paul *et al.* (2016) ^[33] made an empirical comparison between private and public sector bank clients in India using stepwise regression and concluded that service quality leads to satisfaction and private banks perform better than public banks in some aspects; however, their study was carried out prior to the development of digital banking via mobile apps and did not use SEM at all. Kant & Jaiswal (2017) ^[20] validated the service-quality dimensions with SEM methodology; however, they limited their samples only to public sector bank clients and thus do not provide any point for comparison. Some of the studies conducted recently, which utilize digital-specific scales such as EBSQ, use the PLS-SEM technique appropriately, but mostly use one-institution samples.

This study addresses this gap directly: by developing a model of how the quality of digital services affects satisfaction and loyalty using the PLS-SEM technique and

by examining the moderating role of the type of bank ownership over these relationships through MICOM-based Multi-Group Analysis. The rest of the paper is structured as follows: Section 2 presents the literature review and explains the contributions of the current study. Section 3 elaborates on the theoretical model and hypotheses. Section 4 presents the methodology. Section 5 presents the findings of the conducted empirical survey. Section 6 provides a discussion of the theoretical and practical implications, while Section 7 concludes the paper.

Literature Review

Much research on banking service quality has been conducted ever since the earliest use of the SERVQUAL model (Parasuraman *et al.* 1988) ^[31] in banking services. Parallel streams of research have examined the issue of the quality of digital and electronic banking services. The use of a scale for the measurement of Electronic Banking Service Quality (EBSQ), including reliability, website/application design, privacy and security and responsiveness, among others, has used Partial Least Squares – Structural Equation Modeling (PLS-SEM) to measure the effect of quality of digital service on user satisfaction, with strong and significant effects (Parasuraman *et al.* 2005) ^[32]. This body of research has been carried out using samples from the private sector or individual banks, with little exploration of the issue of whether the results apply to public sector bank customers.

Paul, Mittal, and Srivastav (2016) ^[33] still stand out among the closest precedents to this study because they have directly investigated differences between private and public sector bank customers in India in regard to the influence of service quality on customer satisfaction; the fact that various dimensions of service quality influence satisfaction differently in terms of organizational type gives empirical grounds to expect a moderating effect, although the authors do not investigate digitally oriented metrics and modeling.

Kant and Jaiswal (2017) ^[20], furthering this line of research, used the Structural Equation Modeling technique to validate the dimensions of perceived service quality amongst customers of public sector banks, indicating that structural equation modeling is superior in generating dimension-level insights compared to regression techniques. The limitation of their study, though, lies in the fact that their analysis is confined to public sector banks only.

In addition to this literature within India, Son *et al.* (2020) ^[40] have studied this relationship in the Journal of Operations Management from a perspective of what they refer to as “hidden defection”, which describes a reduction in the loyalty of customers to banks despite no obvious change in adoption or usage figures. The transactional-based evidence presented here demonstrates that changes in loyalty in relation to digital banking can be complex and are not necessarily indicated through any measure of satisfaction alone, which is relevant to why loyalty is included separately in the model in this study.

Vashisht and Singh (2023) ^[41] compared descriptive effectiveness of Indian public and private digital banking without structural invariance tested model; and Khan *et al.* (2023) ^[23] revealed full mediation of e-satisfaction between e-service quality and loyalty in Pakistan.

Arora and Banerji (2024) ^[2] have shown, studying 524 public sector clients only, that RATER-based service quality predicts satisfaction and loyalty through customer

experience, but cannot comment on ownership-type comparison. The prior research supports aspects of this design but still fails to bridge this gap: Bhuvaneswari and Maruthamuthu (2024) ^[5] demonstrated that SERVQUAL-based dimensions predict e-banking satisfaction independent of ownership type comparison.

The relevant comparative literature in relation to this design is Koti *et al.* (2025) ^[26], who studied 230 users of mobile banking services and compared banks of the public and private sectors using PLS-SEM in India; satisfaction effects were observed to be more pronounced for the former – helping formulate expectations for this study, despite the absence of a digital-channel-specific instrument and invariance-tested Multi-Group Analysis. Chouhan *et al.* (2025) ^[6] found, surveying 792 people in ten banks, that the following factors differentiate banks: tangibles, responsiveness, efficiency, empathy, fairness, and access; but their model is also not digital-channel-specific. Overall, one may conclude that ownership-type comparison has not yet been resolved, and that there is no comparative study with a digital-channel-specific instrument and invariance-tested Multi-Group Analysis for different ownership types. Kappil and Santhi (2025) ^[21] have employed the same EBSQ dimensions as here (reliability, website design, privacy and security), where two of these relationships are moderated by customer involvement without any ownership type or invariance test comparison; Nguyen (2025) ^[29] demonstrated that word-of-mouth moderates the e-banking satisfaction in Vietnam;

1. Theoretical Underpinnings

Three theoretical approaches form the conceptual foundation of this research. First, the relationship between service quality, satisfaction, and loyalty can be traced back to the SERVQUAL approach (Parasuraman *et al.* 1988) ^[31] and its modern e-version, E-S-QUAL (Parasuraman *et al.* 2005) ^[32], in which the role of perceived service quality is seen as leading to satisfaction. Second, the connection between satisfaction and loyalty can be traced back to Oliver's (1999) ^[30] theory of consumer loyalty, where loyalty is viewed as a multiphase phenomenon going through stages of cognitive, affective, conative, and eventually action loyalty. Finally, the expectation of an ownership-based moderator is based on the Institutional approach, in which the nature of public banks allows one to assume that the implicit government guarantee makes customers feel more secure than those who deal with private banks, whose orientation to the market should lead to increased expectations regarding the user experience and design.

2. Synthesis and Gap Statement

Overall, the existing literature demonstrates three main areas of consensus regarding the design of the current study: First, service quality dimensions are reliable predictors of satisfaction in Indian banks; second, structural equation modeling is a better approach for dimension-level analysis compared to traditional statistics; and third, measuring service quality via digital channels becomes an essential part of research because of changing nature of client-server interactions. The systematic search in Scopus and Web of Science (2015 ^[18]-2026; keywords: "PLS-SEM", "EBSQ" OR "electronic service quality", "digital/mobile/internet banking", "ownership type" OR "public private bank", and

"India") did not reveal any study, which would include simultaneously (1) the use of the PLS-SEM structural modeling approach; (2) the use of a digital-channel specific service-quality model (EBSQ); and (3) invariance-tested Multi-Group Analysis on public and private sector bank clients in India.

Conceptual Framework and Hypotheses

Based on the findings from the literature review, this research develops a structural model where the five digital service quality

factors serve as the exogenous constructs predicting Customer Satisfaction that further predicts Customer Loyalty, with the ownership structure of the bank serving as a moderating variable for the relationship between service quality and satisfaction and Customer Satisfaction being the mediator between service quality and loyalty. The five service quality factors: reliability, app/website design, privacy and security, responsiveness, and assurance are borrowed from the SERVQUAL approach as proposed by Paul *et al.* (2016) and Kant and Jaiswal (2017)^[20, 33], as well as from the EBSQ framework

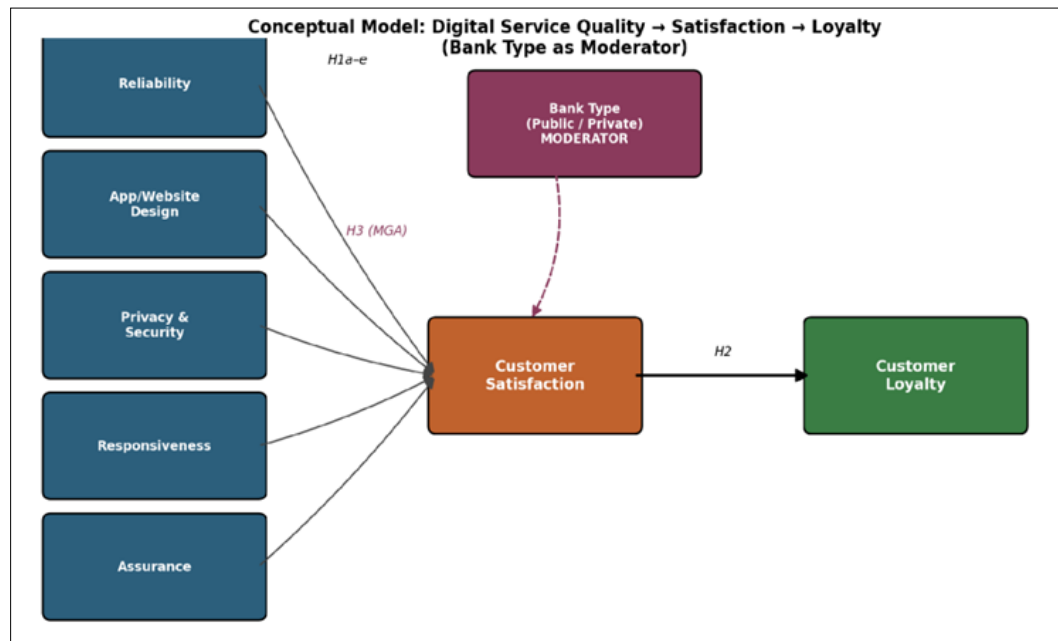


Fig 1: Proposed conceptual model:

Fig. 1 shows that five exogenous service-quality constructs predicting Customer Satisfaction, which in turn predicts Customer Loyalty, with bank ownership type moderating the service-quality-to-satisfaction paths and Customer Satisfaction mediating the service-quality-to-loyalty paths.

1. Direct-Effect Hypotheses

The term reliability relates to how consistently and accurately the banking institution's information system performs transactions. Considering that mistakes in transactions have an immediate and direct impact on the money of the clients, reliability should serve as one of the major factors contributing to customer satisfaction in all types of banks, in line with EBSQ studies.

H1a: Reliability positively influences Customer Satisfaction with digital banking services.

Design for Application/Web is an indicator of how user-friendly, navigable, and responsive the interface is through which the bank interacts with its customers. There appears to be more focus on designing applications in the private sector banks than in the public sector banks in India, hence the implication that design could play an important role in customer satisfaction among the former.

H1b: App/Website Design positively influences Customer Satisfaction with digital banking services.

The dimension of Privacy and Security is built on the trust of the customer regarding the privacy of his/her personal

and financial information. Considering that government-owned banks in India enjoy an implicit guarantee of the government, which may give customers an additional level of security, this dimension may have undue significance for customers of government-owned banks, while for private-owned banks' customers, security can be a foregone conclusion.

H1c: Privacy and Security positively influence Customer Satisfaction with digital banking services.

Responsiveness, which indicates the timeliness of the support provided by the bank, and Assurance, which refers to the confidence of customers in the digital expertise of the bank, are both assumed to have a positive effect on customer satisfaction, which is supported by past service quality studies, although not necessarily with any differing magnitudes.

H1d: Responsiveness positively influences Customer Satisfaction with digital banking services.

H1e: Assurance positively influences Customer Satisfaction with digital banking services.

2. Satisfaction, Loyalty, and Mediation

Following the existing empirical evidence on the positive relationship between satisfaction and loyalty in services marketing, it can be anticipated that satisfied customers will show more loyalty behaviourally and attitudinally, which includes customers' intention to continue using the bank and good word-of-mouth.

H2: Customer Satisfaction positively influences Customer Loyalty.

Since the theory suggests that service quality factors will influence loyalty through satisfaction but not directly, Customer Satisfaction is considered a mediator between the dimensions of service quality and loyalty.

H2a–H2e: The effects of Reliability (H2a), App/Website Design (H2b), Privacy and Security (H2c), Responsiveness (H2d), and Assurance (H2e) on Customer Loyalty are mediated by Customer Satisfaction.

3. Moderation by Bank Ownership Type

Finally, and the core of this study's contribution, bank ownership is suggested to be a moderator of the relationship between dimensions of service quality and satisfaction owing to the differences in their institutional trust structures, investment in technology, and customer expectations across the public and private sectors of banking in India.

H3: Bank ownership type (public versus private) significantly moderates the relationships between digital service quality dimensions and Customer Satisfaction.

Methodology

The methodology for this research includes a quantitative approach and uses a cross-sectional survey design. The sample population will be Indian customers who have used either their bank's mobile app or internet banking system on at least a monthly basis. These customers belong to public and private sector banks.

1. Instrument Development

A structured questionnaire with twenty-seven items in seven constructs (twenty-eight when fielded due to the Responsiveness scale being measured using four items instead of three; see Section 5.2) (five service-quality constructs, satisfaction and loyalty) was formulated, which uses validated questions from Paul *et al.* (2016), Kant and Jaiswal (2017)^[20, 33], and the EBSQ literature (Parasuraman *et al.* 2005)^[32]; satisfaction questions also use Oliver (1999) and Fornell and Larcker (1981)^[10, 30]'s work, and loyalty questions use traditional behavioral and attitudinal measures of loyalty used in services marketing. All the constructs are measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire will be pre-tested among 30 current users of digital banking services before conducting fieldwork.

2. Sample Size and Sampling Procedure

Sample size was estimated using statistical power tables developed by Cohen (1992)^[7] and adapted for PLS-SEM by Hair *et al.* (2022)^[16], considering the maximum number of structural paths leading to one endogenous variable in the conceptual model — here, five structural paths leading to Customer Satisfaction. With a statistical power of 80% and a significance level of 0.05, the minimum sample size should range between 45 respondents (if expected R^2 equals 0.50) and 147 respondents (if expected R^2 equals 0.10). Since in the Multi-Group Analysis, which is the main test in this research, the statistical power is needed not in the combined sample but in each comparison group separately, the sample size of 200–250 respondents per group (total of 400–500 respondents) is chosen, following the precedent sample size of Paul *et al.* (2016)^[33]. The respondents will

be recruited using a combination of purposive and convenience sampling, stratified by primary bank ownership (public or private) with the screening questions about digital channels usage.

3. Common Method Bias

Due to the cross-sectional and self-reported characteristics of the data, common method variance (CMV) becomes a possible problem for the validity of this research. The procedure and statistical approaches advocated by Podsakoff *et al.* (2003)^[34] will be used to avoid such a threat. First, assurances about the anonymity of respondents will be provided. Second, questions will be formulated differently and with different anchors. Third, the questionnaire will include predictor and criterion questions separately. To measure CMV statistically, the Harman single-factor test will be carried out after collecting data. When the percentage of explained variance by one factor is less than 50%, CMV will not become an issue.

4. Analytical Procedure

The data analysis process will take place in four steps by applying Partial Least Squares Structural Equation Modeling using SmartPLS 4 (Ringle *et al.* 2024)^[36]. First, the measurement model will be evaluated based on the reliability of indicators, internal consistency (Cronbach's alpha and composite reliability) and convergent validity (average variance extracted) along with discriminant validity through the heterotrait-monotrait ratio (HTMT; Henseler *et al.* 2015)^[18]. Second, the structural model will be estimated for the pooled sample, where the path significance will be calculated through the bootstrap approach using 5,000 subsamples. The effect size (f^2) and variance inflation factor (VIF) will be considered together with the path coefficient. Third, the measurement invariance will be ensured across the two samples of public and private sectors through the application of the Measurement Invariance of Composite Models (MICOM) approach (Henseler *et al.* 2016)^[19]. This is a prerequisite step for any cross-group comparisons. Fourth, conditional on achieving measurement invariance, Multi-Group Analysis will be performed by applying the non-parametric permutation test with 5,000 permutations.

5. Ethical Considerations

This study was conducted in accordance with standard ethical research principles. Informed consent was obtained from all participants, who were assured of anonymity and confidentiality and of their right to withdraw at any time without consequence. No personally identifiable information was collected.

Results

1. Common Method Bias Check

Unrotated principal component analysis using a single factor (Harman's test) was carried out for all 28 variables. The first unrotated principal component explained 30.1% of the total variance, which is less than the 50% cut-off point that is normally used to show the presence of common method bias (Podsakoff *et al.* 2003)^[34]. No marker variable test was done in this manuscript.

2. Measurement Model Assessment

Table 1 shows the indicator loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted

(AVE) for all seven constructs. The loadings were higher than 0.80, the alpha and CR scores were higher than 0.85, and the AVE scores were higher than 0.69, all comfortably exceeding the standard cut-off points of 0.70 (loadings, alpha, CR) and 0.50 (AVE; Hair *et al.*, 2022) ^[16]. It is worth noting that the Responsiveness construct was measured with four indicators (RS1 to RS4) in the actual instrument, not the three originally proposed in Section 4.1.

Table 1: Measurement model assessment.

Construct	Items	Loadings	Cronbach's α	CR	AVE
Reliability	4	0.82–0.85	0.856	0.903	0.699
App/Website Design	4	0.80–0.87	0.858	0.904	0.702
Privacy & Security	4	0.83–0.86	0.862	0.906	0.707
Responsiveness	4	0.82–0.87	0.867	0.909	0.715
Assurance	4	0.82–0.86	0.858	0.904	0.701
Satisfaction	4	0.82–0.87	0.861	0.905	0.705
Loyalty	4	0.82–0.86	0.859	0.904	0.703

3. Discriminant Validity (HTMT)

Table 2: HTMT discriminant validity matrix.

	Rel	Design	Privacy	Resp	Assur	Sat	Loy
Reliability	–						
App/Website Design	0.306	–					
Privacy & Security	0.297	0.311	–				
Responsiveness	0.248	0.319	0.248	–			
Assurance	0.322	0.326	0.276	0.376	–		
Satisfaction	0.471	0.503	0.503	0.456	0.497	–	
Loyalty	0.291	0.356	0.399	0.356	0.350	0.668	–

All values fall below 0.85–0.90, confirming discriminant validity (Henseler, Ringle, & Sarstedt, 2015) ^[18].

4. Measurement Invariance (MICOM)

Table 3: MICOM results.

Step	Criterion	Result	Invariance Established?
1. Configural invariance	Same indicators, same data treatment across groups	Identical indicator set, identical data treatment (mean-centred, unit-variance-scaled) applied to both groups	Yes
2. Compositional invariance	Permutation $c \approx 1$ (or 95% CI contains 1) for all constructs	$c = 0.9995$ –1.0000 across all 7 constructs; permutation 95% CI for each c includes 1.00 ($n=5,000$ permutations)	Yes (all constructs)
3a. Equal variances	Permutation $p > 0.05$ for all constructs	$p > 0.05$ for 6 of 7 constructs; App/Website Design failed ($p = 0.030$)	Partial (6/7 constructs)
3b. Equal means	Permutation $p > 0.05$ for all constructs	$p > 0.05$ for 6 of 7 constructs; Loyalty failed ($p = 0.029$)	Partial (6/7 constructs)

Complete invariance (Steps 1–3) was confirmed for 5 out of 7 constructs; App/Website Design and Loyalty obtained partial invariance. Since configural invariance (Step 1) and compositional invariance (Step 2) have been confirmed for all seven constructs, the path comparisons reported in Table

5 (Multi-Group Analysis) are legitimate even though complete measurement invariance (Step 3) could not be confirmed for App/Website Design (variance difference significant, $p = .030$) and Loyalty (mean difference significant, $p = .029$), because Henseler, Ringle, and Sarstedt (2016) ^[19] demonstrate that partial invariance (Steps 1–2) is a sufficient condition for comparing path coefficients between groups.

5. Structural Model and Hypothesis Testing

Table 4: Structural model path estimates (bootstrap, $n=5,000$ resamples).

Path	β	t-value	p-value	f^2	VIF	Supported?
H1a: Reliability $\rightarrow$ Satisfaction	0.194	5.05	<.001	0.057	1.17	Supported
H1b: App/Website Design $\rightarrow$ Satisfaction	0.213	5.29	<.001	0.067	1.20	Supported
H1c: Privacy & Security $\rightarrow$ Satisfaction	0.242	6.69	<.001	0.089	1.15	Supported
H1d: Responsiveness $\rightarrow$ Satisfaction	0.178	4.59	<.001	0.047	1.19	Supported
H1e: Assurance $\rightarrow$ Satisfaction	0.198	5.23	<.001	0.056	1.23	Supported
H2: Satisfaction $\rightarrow$ Loyalty	0.575	17.73	<.001	0.493	1.00	Supported

$R^2 = 0.431$ for Satisfaction and $R^2 = 0.330$ for Loyalty; Q^2 (10-fold cross-validated predictive relevance, which approximates the native blindfolding method of SmartPLS) = 0.420 for Satisfaction and 0.327 for Loyalty.

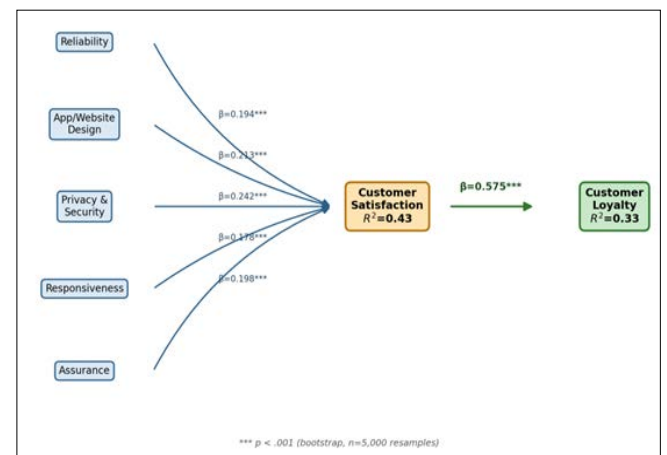


Fig 2: Estimated structural model with standardized path coefficients (pooled sample, $N=450$; bootstrap $n=5,000$).

6. Mediation Analysis (H2a–H2e)

The bootstrapped indirect effects with 5,000 samples and bias-corrected 95% confidence intervals confirmed that Customer Satisfaction mediates the relationship between all five dimensions of service quality and Customer Loyalty, according to Zhao *et al.* (2010) ^[45]. About Reliability, App/Website Design, Responsiveness, and Assurance, the direct effect of each on Loyalty is not significant, meaning full (indirect-only) mediation; regarding Privacy and Security, the direct effect is significant ($\beta = 0.106$, $p = .014$).

Table 5: Bootstrapped mediation effects (H2a–H2e).

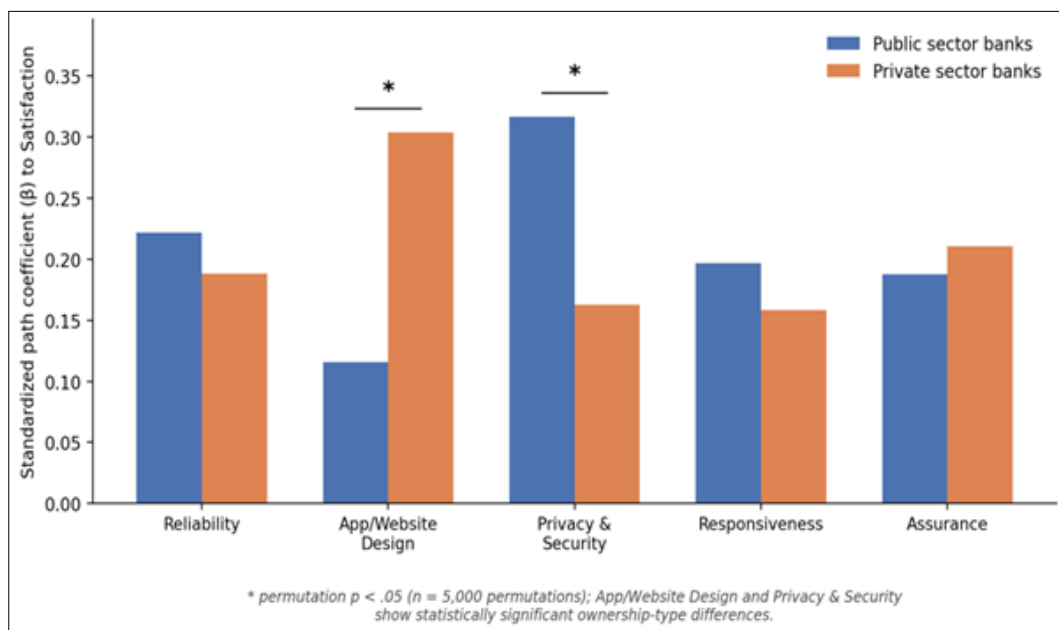
Dimension (H2)	Indirect effect [95% CI]	Direct effect	VAF	Mediation type
Reliability (H2a)	0.112 [0.066, 0.160]	-0.006	105.5%	Full
App/Website Design (H2b)	0.122 [0.075, 0.171]	0.045	73.1%	Full
Privacy & Security (H2c)	0.139 [0.094, 0.184]	0.106*	56.6%	Complementary partial
Responsiveness (H2d)	0.103 [0.058, 0.150]	0.078	56.9%	Full
Assurance (H2e)	0.114 [0.070, 0.158]	0.040	73.9%	Full

*Direct effect significant at $p < .05$.

7. Multi-Group Analysis: Public vs. Private Sector Banks

Table 6: Multi-Group Analysis results; comparing public and private sector bank customers (permutation test, $n=5,000$ permutations).

Path	β Public	β Private	Difference	Permutation p	H3 Supported?
Reliability $\rightarrow$ Satisfaction	0.222	0.188	0.033	0.659	No
App/Website Design $\rightarrow$ Satisfaction	0.116	0.304	-0.188	0.021	Yes
Privacy & Security $\rightarrow$ Satisfaction	0.317	0.163	0.154	0.034	Yes
Responsiveness $\rightarrow$ Satisfaction	0.197	0.158	0.038	0.611	No
Assurance $\rightarrow$ Satisfaction	0.188	0.211	-0.023	0.765	No
Satisfaction $\rightarrow$ Loyalty	0.545	0.596	-0.050	0.433	N/A (not part of H3)

**Fig 3:** Multi-group comparison of structural paths, public vs. private sector bank customers (permutation test, $n=5,000$ permutations).

Discussion

1. Summary of Findings

The first five hypotheses, H1a through H1e, about the relationship between the quality of bank services and customer satisfaction have been proved true because all of them significantly and positively influenced customer satisfaction. The most influential among them was the dimension Privacy and Security, its effect size being equal to $f^2 = 0.089$, although, according to Cohen (1988)'s criteria (small $\geq .02$, medium $\geq .15$, large $\geq .35$), all of these f^2 are small values because they are statistically significant. Customer Satisfaction significantly predicted Customer Loyalty (H2), and fully or partially mediated the effect of all five service quality dimensions on Loyalty (H2a through H2e). Concerning hypothesis H3 about the moderation of relationships between the quality of bank services and customer satisfaction, the results of the Multi-Group Analysis indicated that the ownership type significantly moderated only two out of five paths: App/Website Design was more important for private bank customers, and Privacy and Security – for public bank customers.

2. Theoretical Contributions

Contribution 1: Application of institutional theory to online banking. Two out of the five paths of satisfaction from service quality were moderated by ownership types, implying that institutional variables such as ownership type and its corresponding trust architecture influence how digital service quality influences satisfaction. This is a new application of institutional theory which is traditionally studied in the domain of organizational behavior, to customers' perception of services.

Contribution 2: Improvement of the EBSQ conceptual framework. The differential impact of App/Website design and privacy and security dimensions of EBSQ, as compared to uniform impact on other three dimensions, implies that the importance of EBSQ dimensions differs by context, contrary to one of the assumptions underlying most of EBSQ studies.

Contribution 3: Methodological contribution. This study proves the applicability of MICOM tested Multi-Group Analysis approach in the comparison of customer perceptions in a comparative Indian banking context.

3. Practical Implications

Practical implications from the results of the fielded survey may be drawn regarding strategies for digital banking operations, but since the effect sizes ($f^2 = 0.047-0.089$) are small, and the survey is cross-sectional and based on self-reports, the findings should be regarded as directional, not causal. The weight of Privacy and Security was higher among customers working in the public sector, which fits well with the idea that communication about security issues can serve as an effective addition to public banks' reputation advantage backed by their government affiliation. As for the App/Website Design variable, its weight was higher among the clients of private firms, making further investments into it justified, pending confirmation via longitudinal research.

4. Limitations

A number of limitations must be highlighted here. To begin with, the cross-sectional design prevents any causal inference and future studies should use longitudinal research designs to prove temporal precedence between service quality, satisfaction, and loyalty. Second, the sample is stratified according to the type of ownership, but there is no way of knowing whether the sample is representative for the whole of India and whether it can be generalized to other regions. Third, survey participants may experience social desirability bias when answering the questions in the survey instrument even though there are measures outlined in Section 4.3 that are aimed at overcoming this problem. Fourth, the study concentrates only on five dimensions of EBSQ but some others like cost and ease of onboarding may also be important and can be investigated in future. Fifth, customer demographics like age, income, location (urban or rural) and digital literacy were not included into the sample because the data were not available.

5. Future Research Directions

Further research could study the extent to which any moderating effect, if found here, holds true in case of varying groups of customers, e.g., urban and rural customers or different age-groups. Any further longitudinal study could investigate how ownership moderates the effect changes with the ongoing process of digitization of the public sector banks. Cross-country studies could also help analyze the context-dependence of these results in India.

Conclusion

This study investigates if there is any difference in the impact of digital banking service quality dimensions and customer satisfaction between public and private sector banks in India. With PLS-SEM and MICOM-tested Multi-Group Analysis, this study proves that all five proposed service-quality dimensions predict customer satisfaction; satisfaction predicts loyalty and mediates the relationship between all five dimensions and loyalty; and ownership significantly moderates the relationship between App/Website Design and Privacy and Security dimensions and customer satisfaction.

The findings of this study contribute to literature in three ways. First, theoretically, it extends institutional theory to digital services' perceptions and improves the framework of EBSQ by showing the contingent impact of two out of five dimensions. Second, methodologically, it creates a replicable template for invariance-tested comparative research on banking. Third, practically, it helps the

management of Indian banks decide where to invest their efforts: public sector banks need to pay special attention to communicating about the high level of security, while private sector banks should continue focusing on the interface design.

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